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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,741

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Luca Balconi

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EXAMINER

LEONG, NATHAN T

ART UNIT

PAPER NUMBER

4172

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,741	Applicant(s) BALCONI ET AL.	
	Examiner NATHAN LEONG	Art Unit 4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/14/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 14-19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belli et al WO 99/33070 in view of Harlin et al WO 01/38060 A1.

Claims 14-26 are drawn to the method of producing a cable, where the cable has at least one transmissive element and an expanded and cross-linked coating layer. The method is comprised of steps of extruding the coating composition, forming a coating layer made of expandable and cross-linkable polymeric material, expanding and cross-linking the material by heating the coating layer at atmospheric pressure with a heating fluid.

Per claim 14, Belli teaches the method of producing an electrical cable comprising a conductor (transmissive element, see pg. 5, lines 10-11), comprising an

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expanded semiconductive layer (the coating layer, pg. 5, lines 13-15) in a radially outer position with respect to the cable, that may be made of cross-linkable material and cross-linked (pg. 13, lines 8-15). The cable composition is made by an extrusion process (pg. 11, lines 22-30), where the expansion step is also carried out (pg. 12, lines 6-20). The cross-linking and expanding steps of the coating are carried out under heat (pg. 13, lines 11), by a heating fluid in the extruder (pg. 12, lines 26-31).

Per claims 15 and 16, Belli teaches using an extruder rotation speed of 1.2 rpm, equivalent to a speed of 1.2 m/min, or 72 m/s, which would cause the heating fluid within the extruder to circulate at about 72 m/s. Per claim 17, Belli teaches using an extrusion temperature that is greater than 140°C, for example, in the range of 160-200°C (pg. 13, lines 3-8, and Example 3). Per claim 18, Belli teaches using inert gases such as nitrogen, or air, as the heating fluid (pg. 12, lines 26-31). Per claim 19, teaches a coating layer (the expanded semiconductive layer) containing an expanding agent (pg. 12, lines 21-25) and a cross-linking agent (pg. 13, lines 8-26). Per claims 21 and 22, Belli teaches using dicumyl peroxide as an organic peroxide as the cross-linking agent for the coating composition (pg. 13, lines 8-26). Per claim 23, Belli teaches using mixtures of organic acids, for example citric acid, with carbonates and/or bicarbonates as the expanding agent (pg. 12, lines 21-25).

The wording of claim 24 is not necessarily drawn to using the coating layer as a cooling method for the cable, because it states "cooling said cable provided with said expanded and cross-linked coating layer". Thus, for the purposes of examination, it can be and is interpreted as the method comprising cooling both the cable and coating layer

together. Therefore, per claim 24, Belli teaches cooling both the cable along with the expanded coating layer in air (see Example 3). Per claims 25 and 26, Belli teaches having a metal shield around the coating layer (pg. 13, lines 27-35), and further coated with a protective outer sheath (pg. 14, lines 5-9).

Belli fails to explicitly teach operating the expansion and cross-linking steps at atmospheric pressure, as disclosed in claim 14. Harlin teaches the method of cross-linking a layer by curing/heating after extrusion under normal atmospheric pressure (pg. 2, lines 13-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the cable forming method taught by Belli with the method taught by Harlin. One would have had motivation to make such a combination because operation at a relatively lower pressure will allow expensive pressure vessels, difficulties associated with starting and stopping overpressure processes, and additional safety concerns to be avoided (pg. 2, lines 7-20).

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Belli et al WO 99/33070 in view of Harlin et al WO 01/38060 A1, as applied to the claims above, further in view of Chaudhary et al US 2001/0002075 A1.

Claim 20 is drawn to the method described above in claim 19, further comprising that the decomposition temperatures of the cross-linking agent and the expanding agent differ by at most 50°C. Belli in view of Harlin teaches all the limitations of claim 19, as discussed above, in addition, teaching a step of maintaining a temperature below the decomposition temperature of the expanding agent, where the agent would expand

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above said decomposition temperature (see Examples 1-2). Belli in view of Harlin fails to explicitly teach having a maximum decomposition difference of 50°C between the cross-linking agent and expanding agent. Chaudhary teaches the importance of the decomposition temperature in the cross-linking process by also maintaining operating temperature based on the decomposition temperature of the cross-linking agent [0011]. Since Belli teaches a coating layer using both an expanding agent and a cross-linking agent together, it would be obvious to one of ordinary skill in the art at the time of the invention to know and utilize the decomposition temperature of the expanding agent taught by Belli and the decomposition temperature of the cross-linking agent taught by Chaudhary so that the cross-linking step and the expansion step could be done together because this would present a more efficient scenario where only one heating step, instead of two, are needed. One of ordinary skill in the art at the time of the invention would realize that in order to have both the cross-linking step and the expansion step occur together, the difference between the decomposition temperatures of the two respective agents would have to be relatively close together. One of ordinary skill in the art at the time of the invention would have the knowledge and desire to optimize the process to yield the best results. Thus, claim 19 comprising the limitation of a 50°C difference between the cross-linking agent and the expanding agent is not patentably distinct over the prior art.

Conclusion

5. Claims 14-26 are pending in the application.
6. Claims 14-26 are rejected. No claims are allowed.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN LEONG whose telephone number is (571)270-5352. The examiner can normally be reached on Monday to Friday, 7:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN LEONG/
Examiner, Art Unit 4172

/Brian K Talbot/
Primary Examiner, Art Unit 1792